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AUTHOR	Buckley, Shannon; Wilkinson, Julie
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ABSTRACT

Students attending high school in a large midwestern metropolitan area participated in a program designed to increase their motivation in a geometry class. Evidence of the problem included teachers' observations of off-task student behavior. Also, teachers reported that homework was not being completed as often as desired, and that students who fell behind in their homework completion were often lost during class in subsequent lessons. Three categories of interventions were designed: (1) an increase in teacher-parent contact; (2) an increase in teacher assistance; and (3) an increase in teacher-student communications. Post intervention data did not indicate increases in student achievement, student understanding of concepts or transfer of information, or student time on-task. The researchers felt the interventions were worthwhile even though no significant improvements towards the goals were documented. Evaluation instruments are appended. (Contains 16 references and 6 figures.) (JDM)

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IMPROVING STUDENT MOTIVATION BY INCREASING STUDENT AND PARENTAL AWARENESS OF ACADEMIC ACHIEVEMENT

Shannon Buckley

Julie Wilkinson

An Action Research Project Submitted to the Graduate Faculty of the School of Education in Partial Fulfillment of the Requirements for the Degree of Master of Arts in Teaching and Leadership

Saint Xavier University

Field-Based Masters Program

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This project was approved by

J. Ann B. Thulen, Ed.D.
Advisor

N. Nancy Frakes, Ph.D.
Advisor

Beverly Gulley
Dean, School of Education

Title: Improving Student Motivation By Increasing Student And Parental Awareness Of Academic Achievement
Authors: Shannon Buckley & Julie Wilkinson
Date: May 2001

ABSTRACT

This study describes a program designed to increase student motivation in the secondary geometry classes. The targeted population consisted of high school students enrolled in geometry classes in a Mid-Western metropolitan area high school. Evidence for the existence of the problem included records of student homework scores to measure academic achievement, teacher observations to measure student off task behavior during class, and student surveys to monitor student transfer of information.

Analysis of probable causes was evidenced by teachers' observations of off task student behavior. Teacher observed that homework was not being completed as often as desired. Teacher observed that students who fell behind in their homework completion were often lost during class in subsequent lessons.

A review of solution strategies suggested by cited authors, combined with an analysis of the problem setting, resulted in the selection of three categories of intervention: Increased teacher parent contact; increased teacher assistance; and increased teacher student communication.

Post intervention data did not indicate an increase in student achievement in mathematics, student understanding of concepts or transfer of information, or student time on-task. The researchers felt the interventions implemented were worthwhile although no significant improvement in the goal area was documented.

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CHAPTER 1

PROBLEM STATEMENT AND CONTEXT

General Statement of the Problem

The targeted high school students enrolled in geometry classes in a Mid-Western metropolitan area high school lacked motivation to complete their assignments, which interfered with their academic growth. Evidence for the existence of the problem included anecdotal records that documented completed tasks, teacher observations, and student surveys.

Immediate Problem Context

The targeted high school was built in 1972 and opened as a junior high. In 1985, the two existing high schools were overcrowded, and the targeted school was converted to a three-year high school. In 1994, all three high schools became four-year schools. Two years later the school added a larger gym, an Interconnect Communications Network (ICN) room, and a Classroom For the Future (CFF) to accommodate the changing needs. During the summer of 1999, the county had a 1% sales tax increase in order to improve area schools. With this money the targeted school was able to add a parking lot and planned to build an auditorium.

There were 1,100 students in the targeted school. The racial background of the school population consisted of 1% Native American, 70% Caucasian, 23% African American, 3% Hispanic, 3% Asian, and less than 1% Other. The school population included 6% Mentally Disabled, 10% Learning Disabled, and 1% behaviorally disordered. The school provided free

lunch for 24% of the student population and 6% received a reduced lunch rate. The school developed an attendance policy to improve an 85% attendance rate. In its first year the school's attendance improved to 96%, and it maintained greater than 90% in subsequent years.

The faculty of the targeted school included 96 certified employees. The certified staff averaged 21 years of experience teaching, 45% with a bachelor's degree, 50% with a master's degree, and 5% having a specialist's or doctorate degree. The faculty also included 64 classified personnel, consisting of clerical staff, instructional aides, cafeteria, and custodial staff. The school had full time security personnel, including a full time police officer provided in agreement with the city police department.

The targeted school had 66 classrooms, requiring staff to travel within the building to provide instruction. The school had 18 departments that offered 251 courses for students to choose. The school day was broken into seven periods of 50 minutes in length, with four lunch periods each giving students 30 minutes to eat. The one story building was air-conditioned which allowed the school to provide all secondary summer school instruction for the district as well as other communities. The staff of the targeted school studied a year round education format. However, based on community and district input, it was decided to remain on the district year calendar. The school had a wide variety of extra curricular activities, some of which included athletics, award winning music programs, and academic clubs.

The Surrounding Community

The targeted high school was in a large metropolitan community with a population of 100,000. First incorporated as a town in the middle 1800's, the city recently covered an area greater than 60 square miles. There were over 80,000 dwelling units with 65% owner occupied.

A modern, three bedroom home could be purchased for $60,000, with newly constructed homes costing around $93,000. Industry included mostly trades, services, manufacturing, and government services. The unemployment rate was around 3 %. The city had three institutions of higher learning. The public school district provided education to over 17,000 students, 30% minority and 70% majority. The district employed approximately 2,400 people and maintained about 40 facilities.

National Context of the Problem

That some students are often not motivated to achieve in an educational setting is of national concern to educators. This lack of motivation inhibits academic growth. The key to understanding this problem is learning what motivates students, what factors influence motivation, and determining what can be done to help unmotivated students.

The willingness of students to actively participate in the academic process is defined as motivation. The sources of motivation vary from student to student. That which makes students feel successful or unsuccessful determines how they enter a learning situation. For secondary students, to try hard and fail may be worse than to put forth no effort and fail. Parental and teacher support, classroom climate, relevance, and school wide goals are factors, which influence motivation (Lumsden, 1994).

Reynolds and Walberg (1992) found that lack of motivation was attributed to a lack of prior achievement and to a poor or inadequate home environment. The attitude that students

attained in a previous situation had the most powerful influence on their attitude in subsequent situations. Kim (1994) concluded that other factors included quality of parental input, the amount of teacher time spent listening and encouraging, and situations in which students had no control over. Students may not be comfortable discussing these issues with their teachers.

The degree of motivation that a student possesses is directly related to the likelihood of success, also to the probability that particular actions determine particular results, and understanding of the validity of those results (Hancock, 1995). Students need to have all effort rewarded with attention placed on their progress, and teachers need to encourage this effort by making tasks appropriate for student ability and easy to comprehend. Allowing students to set goals and encouraging participation by everyone could further encourage achievement (Stipek, 1993).

Student motivation is a compl[illegible] problem at all levels. By working to understand this problem, teachers will increase the possibility of positive student achievement. Society will benefit from having schools that promote high achievement.

CHAPTER 2

PROBLEM DOCUMENTATION

Problem Evidence

Many senior high students are not motivated to work in geometry. Students have difficulty moving on in the field of mathematics without a strong background in geometry. Overall academic achievement is affected because of lowered self-confidence and a minimal understanding of necessary concepts. Teachers and parents note many students have little or no difficulty in math until they reach high school. An effort needs to be made to reverse negative feelings toward the more advanced areas in mathematics, and students need to be encouraged to be successful in all classes, including geometry.

Homework scores are often low resulting from incomplete work and late assignments. The classroom teacher will observe the completion of homework and record daily in a journal the quality of assigned activities as well as the students' ability to meet deadlines. These results will be used to determine which students will require additional assistance in meeting the criteria of the activity. Figure 1 shows the number of homework assignments that were complete and on time, the number that were late and also the percentage of assignments which were on time prior to the intervention.

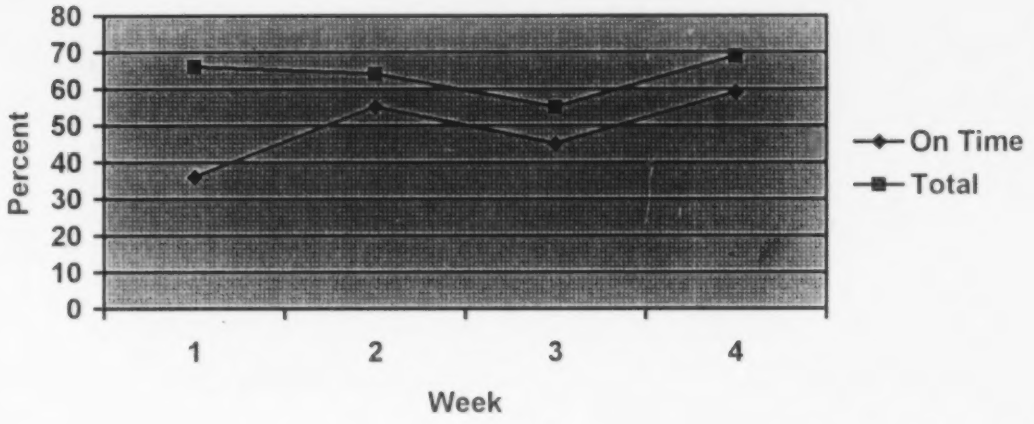

Figure 1. Homework completion prior to intervention

Those students who chose to disrupt class by talking set a negative tone for the classroom and also distracted the other students in the class. Similarly, those who chose to quietly ignore classroom activities were also modeling the wrong kind of behavior in addition to setting themselves up for possible failure. This behavior needs to be discouraged in order to maintain a healthy atmosphere which gives all students the tools to succeed. The students were monitored closely during class time to see how they chose to use their time. On task behavior is strongly encouraged for the entire class session, and the teacher can record any violation in a daily journal along with any intervention that was used. This procedure will allow the classroom teacher to evaluate exactly which students need additional support and exactly what methods were most effective. Figure 2 illustrates how many off task instances there were each week in the targeted classroom.

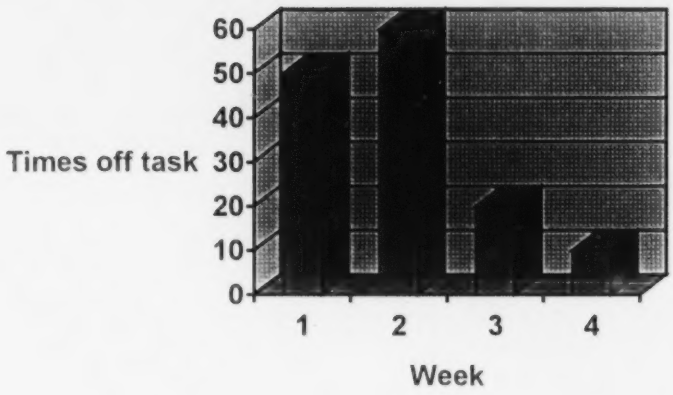

Figure 2. Number of off task instances in four weeks prior to intervention.

Students fall behind for many reasons: poor skills, absences, lack of attention, or failure to practice the skills being taught. Not comprehending even one key concept can make understanding later concepts extremely difficult or impossible. Until the student has a clear understanding of what has been taught in the past teachers cannot expect that student to achieve in the future. Upon completion of each lesson, the teacher asked the students to complete a reflection of how comfortable they felt with the material presented that day. The results were tabulated that day and immediate action was offered to those who were in need. The reflections were kept by the classroom teacher for possible further tabulation.

Causes of the Problem

Many students tend to view homework as a waste of time. The connection is rarely made between practicing skills and mastering skills. With the busy lives of students it is difficult for them to find the time to quickly put an answer an answer down let alone think of the larger picture.

In the immediate lives of typical students the concepts covered in mathematics are seen as not necessary. Beyond basic calculations that a calculator can do for them, these concepts are seen as pointless. Many of their parents have been unsuccessful in math but are very successful in their careers. The necessity of mathematics in a students' particular career field is difficult to relate to each different one, particularly for those who have not made career plans.

With growing class sizes and overcrowded curriculum it is sometimes difficult for teachers to take the time necessary to determine how well a student understands the content. Just getting by and not putting in the extra effort needed to comprehend a concept or transfer it has become accepted in some classrooms today. Quick answers and occasional guesses can sometimes fool a teacher into believing a student has comprehended an idea or concept.

A possible cause for the problem could be that low expectations have been set for the students. According to Oliver (1995), increased student involvement in learning can lead to higher expectations. When students were asked to reflect upon their learning, they increased their personal understanding and improved their attitudes. Increased performance relates directly to getting students involved in learning. Documentation shows that what is expected to happen will in fact happen. This applies to students who feel inadequate, or who are unable to achieve a certain level of understanding. The likelihood students will only achieve the level which they have established for themselves, or the level that has been established for them. If parents,

educators, or society set a standard of achievement for students, then the probability is that students will not achieve beyond this level.

A second possible cause could be the amount of parental or home involvement upon a student's academic life. According to Balli (1998), most educators believe that children do better in school when parents are involved. Students can be expected to not do well when parents show little or no interest. The family and educational system are the two forces responsible for educating children. The relationship between these two forces can prove to be positive or negative.

A third possible cause for the specific problem in this study is a prior poor experience or poor performance in mathematics. Fiore (1999) discussed the tremendous power over self-esteem exercised by teachers. A negative feeling exists among many students toward mathematics. Students are fearful to try because of prior negative result in math. Students may perform well in all other classes but struggle in mathematics. This struggle can be attributed to many different factors. Possible verbal abuse by parents or teachers can be the problem. Parents may pass negative feelings about mathematics onto their children. Also, teachers who are anxious about their own ability in mathematics can pass this anxiety on to their students.

In summary, several causes for a student's low motivation in mathematics can be identified. Low expectations, lack of positive parental involvement, and previous unpleasant experiences or attitudes applying to mathematics are perhaps just a few of the causes. The focus should become finding possible interventions to increase motivation and hopefully increase student academic performance.

CHAPTER 3

THE SOLUTION STRATEGY

Literature Review

Low student motivation is often a source of concern in education. Often academic growth is inhibited because students choose not to participate actively in learning. Educators give much attention to engaging students with little success. Motivation is a complex problem, and until educators can find the key to improved motivation, students will remain behind in their academic growth. A possible cause for the problem could be that low expectations have been set for the students. According to Oliver (1995), increased student involvement in learning can lead to higher achievement. Increased performance may be related to getting students involved in learning. Fiore (1999) discussed teacher's tremendous power over student self-esteem. By encouraging students to ask questions and by creating a comfortable climate, teachers can set clear expectations with the hope of increasing student achievement. Teachers can take the time to help students develop and understand their own learning styles, and discuss issues of anxiety caused by a fear of failure. By helping students understand how previous experiences have affected their current expectations, teachers can move students forward and slowly raise these expectations as the students continue building awareness. According to Ross (1996), less of an emphasis needs to be put on grinding out "the answer". A strategy of helping students understand

the process is useful. Students need to be actively involved in their studies and be encouraged to see information as it affects the broad picture of their understanding.

Students, parents, and teachers have made it acceptable for students to only meet expectations instead of trying to exceed them. Expectations have become lower and lower over time, and students often achieve less. In order to motivate students teachers need to expect excellent work and then accept good work instead of expecting good work and accepting mediocre work.

Another possible cause could be a seeming lack of relevance of the subject to students. Students do not see the "why" in learning mathematics. According to Burby (1999), an easy way to encourage student's desire to learn is for parents and teachers to get involved. Showing students how mathematics relates to their world without a lecture was suggested to work best. By using the real world, students are forced to realize the necessity of given skills. Subjects can also be made relevant when the success in future classes depends on successful understanding of current information.

White (1998) suggested that an effort to create a respectful classroom helped to build student confidence and promoted relevance of the subject. Students were encouraged to meet separately with the instructor. Students were given the opportunity to present difficulties and discuss strategies with the instructor. These discussions resulted in an increased level of interest and superior performance. The students were also given more responsibility toward their own learning.

According to O'Connell (1994), if adults showed a positive attitude towards school, the students pick up on that attitude. Building connections helps to increase relevance to students. Having meaningful discussions about subject matter seemed to increase student awareness.

Strong (1995) suggested that engaging work stimulates curiosity, allowing students to find their own relevance and make work meaningful.

One of the most critical factors in motivating students is making the subject matter relevant to their lives. A positive attitude is required from the student, the parent, and the community on the importance of mathematics. If students become intrinsically motivated they will achieve more and retain the information longer.

A third probable cause is a lack of adequate parental involvement. According to Lazar (1999), student success was determined by a teacher's ability to involve families. Parents blamed teachers for students' poor performance, and teachers often blamed parents for students' lack of effort. Low income and minority parents were particularly blamed for the academic failure of their children. Parents did seem to care about the educational needs of their children. Teachers have not been adequately educated to understand low income or minority families and to network with them. Another concern is the limited access that teachers have to parents. Many secondary teachers view involvement as critical to student's success. Parents are seen as a valuable resource for determining effective interventions for teens in need of help to achieve success.

Carter (2000) found a positive relationship between the level of parental involvement and performance of students. Researchers reported that parental involvement positively affected students' mathematics test scores, increased the amount of time they devoted to homework, and raised their grades. According to Balli (1998), educators agreed that when parents are involved, children do better in school. Teachers want more contact with families, and families wanted information on students' progress. Parent involvement with homework has an effect on

achievement test scores. This increase in test scores is thought to be a result of an increased number of completed homework assignments.

According to Callahan (1998), lack of homework completion has been reported to be a factor contributing to poor academic performance and school failure. Involving parents to give structure to homework sessions was emphasized in the studies cited. Parents were seen as having the most influence on where homework is actually completed. Parents were encouraged to help students learn to self-manage homework sessions. Parents were asked questions regarding how the students were doing homework, and given guidance from educators to help students achieve more understanding from the homework.

Parental influence is a force that educators need to address when attempting to increase student motivation. Parents and educators working together as partners can give students a chance to grow academically. Students will be compelled to try when faced with a unified support team including home and school.

Motivation is a key element in the lack of student achievement. Instead of learning for enrichment, they tend to learn for an immediate reward, such as an "A" on a chapter test. By motivating students to learn for the future, they will be more likely to retain the information and build on it later.

Students who want to learn will enjoy class, actively participate in activities, and seek out the corrections to their mistakes. Learning becomes an everyday activity that students engage in for personal growth. More students will continue their education beyond high school and become life long learners.

Teachers can actively seek out everyday situations relating to the subject matter being taught. Students should be encouraged to do this as well. If teachers can remain excited to teach

and learn, then students will enjoy it as well. The classroom will become a learning environment where everyone is teaching and learning together.

Project Objectives and Processes

Taking into consideration the many strategies available from which to design an effective plan of action to promote change among secondary geometry students, members of this research team concluded that their approach would encompass a combination of diverse strategies. Teachers developed strategies in each of the following: increased parental contact, increased teacher assistance, and increased teacher student communication.

As a result of increased parental contact by the mathematics teacher during the period September 2000 through December 2000, the targeted secondary geometry students will increase their achievement in mathematics as measured by the teacher grade book entries and teacher journals. In order to accomplish this objective, the following processes are necessary:

1. Utilize parent letter.
2. Develop communication format.
3. Develop recording instruments.

As a result of increased learning opportunities provided by the mathematics teacher during the period from September 2000 through December 2000, the targeted secondary geometry students will increase their understanding of mathematics concepts and transfer information as measured by student reflective surveys and teacher observation. In order to accomplish this objective, the following processes are necessary:

1. Develop student survey to assess student transfer of information.
2. Communicate teacher availability to students.
3. Utilize peer tutor program to assist students outside of class.

As a result of increased teacher-student communication by the mathematics teacher during the period September 2000 through December 2000, the targeted secondary geometry students will increase on task behavior as measured by teacher observation and teacher journal entries. In order to accomplish this objective, the following processes are necessary:

1. Develop method of recording teacher journal entries.
2. Develop criteria to determine necessity of student conference.
3. Develop outline for student conference.

Action Plan

The following action plan includes three components to be implemented on an as needed basis. Necessity will be established using the following instruments:

Survey

Students will be given a survey each day that material is presented in class. The researcher will ask the student to record name, and given a scale of 1 – 5, will rate how comfortable they feel with the presented material, 1 being not at all, and 5 being able to explain it well to someone else. The survey information will be recorded, and the students who respond with a 1 or a 2 will receive intensive assistance. The teacher will offer the student the following options: Before school help; help during teacher prep time; after school help; existing peer tutor program; and supplemental material to focus thoughts.

Teacher Journal Entries

The teacher will record daily those students who are off task and the approximate period of time in ten minute intervals.

$x \leq 10$ $10 < x \leq 20$ $20 < x \leq 30$ $30 < x \leq 40$ $40 < x$

Those students who are off task for more than 30 minutes or for three different instances during one period will be spoken with one on one during class that day or the following class day. If further intervention is necessary the students guidance counselor, parent or an administrator may be contacted.

Teacher Observation

Teacher will monitor homework completion very carefully. One assignment not completed will result in a student conference. If the assignment is not completed the following class session a parent will be contacted by phone or e-mail and be made aware of the following: total number of missing homework assignments, student homework grade, other comments. An attempt will be made to e-mail but phone will be used when e-mail is not possible. The above procedure will also be used if a student has three late assignments in one chapter and at each late thereafter.

The previous instruments will be implemented after data has been collected, and will continue to be used throughout the remainder of the research period. The effectiveness of the instruments will be monitored and evaluated over time.

Assessment

In order to assess the student's achievement in mathematics student's grades will be monitored daily. Student reflective surveys will be developed to assess student transfer of information. The surveys will be used as a cognitive tool for students and teacher to evaluate the effectiveness of the information presented. Student on task behavior will be observed by teacher and recorded in a journal. These recordings will be used to monitor the interest level of the material taught. This information will be used by the research team to evaluate effectiveness of the strategies.

CHAPTER 4

PROJECT RESULTS

Historical Description of the Intervention

The research team involved in this study addressed a lack of motivation on the part of high school students enrolled in geometry class. This lack of motivation interfered with their overall academic growth. This problem was evidenced through examination of anecdotal records, teacher observation, and student reflective surveys. Homework scores were often low due to incomplete or late work. Students who were not engaged in learning were disruptive and off-task, or were quietly ignoring learning activities.

Previous to any intervention, the teacher had minimal parental communication, and little input from the students as far as how they felt they were learning. Students were not completing assignments Students who were not achieving may have still earned a passing grade. Then these students moved on to the next class, often without a clear understanding of geometry. Students who were not engaged in learning had poor transfer of information learned.

The first objective of this project was to increase student achievement in mathematics as a result of increased parental contact. The change in student achievement was measured by teacher grade book entries and teacher journal entries. When a student did not turn in an assignment, the teacher met privately with the student. If the assignment was not turned in the

next class period, parents were made aware of the missing assignment, and told of their student's grade. The teacher contacted the parents by phone or e-mail. The research team developed and utilized a parent letter (Appendix A) to send home with the students. Parents were asked to give phone numbers or e-mail addresses at which they could be contacted. These letters were to be returned by the students. The first four weeks of the project were used to gather data on students' homework completion. A phone log (Appendix B) and an e-mail log (Appendix C) were created to assist the researcher in making the information sought and received consistent. The researchers developed a system of recording the information into the teacher grade book. A check mark was given when the researcher contacted or attempted to contact a parent. After the four weeks of data gathering, the researchers monitored the students' homework completion. The teacher had a conference with individual students after the first missed assignment, and then proceeded to contact or attempt to contact parents after any further missed assignments. In the original action plan formed by the researchers, it was stated that parents would be contacted after three late assignments per chapter. The researchers, due to the differing lengths of chapters and the amount of class time it took to monitor the many assignments per chapter, felt this procedure needed to be changed, including the entire time the research was being conducted. The researcher then recorded this data.

The next objective was to increase student understanding of concepts and student transfer of information by increasing the awareness of extra learning opportunities. This objective was measured by student reflective surveys (Appendix D) and teacher observation. Each day new material was presented in class, students were asked to reflect on their understanding of the subject introduced. They were given a scale of one through five to rate this understanding. The teacher processed this reflection, and made learning opportunities available to help the students

that showed a need. These learning opportunities included but were not limited to a peer tutoring program that existed prior to this intervention, time with the teacher before or after school, and during teacher preparation time, and extra information to clarify concepts taught. No baseline information was taken, as no new interventions were created. Students were just made more aware of them. The researchers recorded the information provided from the surveys daily, during the data-gathering portion of the action research program.

The last objective was to increase teacher-student communication in an attempt to improve student time spent on-task. This objective was measured by teacher observation and journal entries. The students who were on task the entire 50 minute class period were given a teacher journal entry of a five. The students who were on task for approximately 40 minutes were given a four, and so on, until those students who were on task for none of the class were given a zero rating. The students who were off task for more than 30 minutes in one class period had a teacher conference during that class period. During this conference the teacher would encourage on-task behavior, remind the student that time on-task effects the grade earned in more then one way, and let the student know why being on-task is important. If further intervention was necessary for the students who were chronically off-task, the teacher might refer that student to an administrator or guidance counselor, depending on the circumstances.

Presentation and Analysis of Results

The number of assignments turned in on time and the total number of assignments completed were documented and compared in order to assess the effects of the increased communication between the researcher and parents. These data were aggregated by weeks and presented in percent totals in Figure 3.

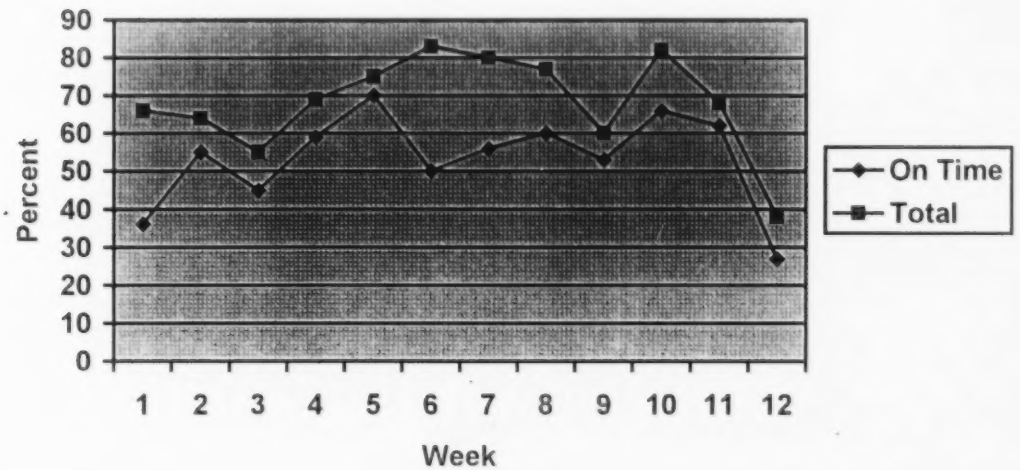

Figure 3. Homework completion after the intervention

For the most part, the two documented percentages appear to agree. The highest rates of completion occurred during the middle weeks of the intervention. During week 5, 70% of the students completed homework on time. The students completed 80% of the assignments during week 6, while the students completed 50% of their assignments on time. The week with the lowest rates was week 12, with only 27% done on time, and 38% done in all.

Students were asked to give a reflection of their understanding of topics covered. This information was aggregated by the week. Each category of the reflection was tabulated at the end of the week, and percents were figured. These percentages were compared in Figure 4.

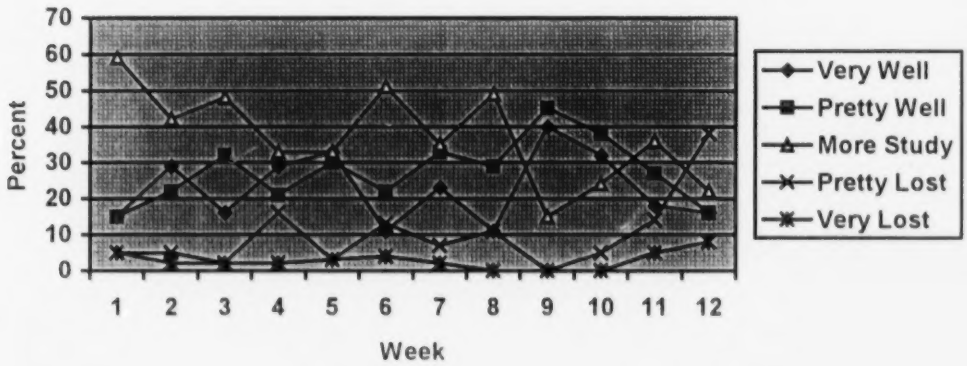

Figure 4. Student reflection results over 12 week intervention period

In general, most students reported having a moderate understanding of material presented. Very few students reported being very lost, or having no understanding of the material presented, until the end of the intervention. The highest or fairly high understanding levels appear to follow a similar curve throughout the intervention.

In assessing the effects of off-task behavior on learning, the teacher observed and recorded the number of off-task instances per week. A weekly tally of total observed off-task incidents was maintained throughout the intervention. The data collected is presented in Figure 5.

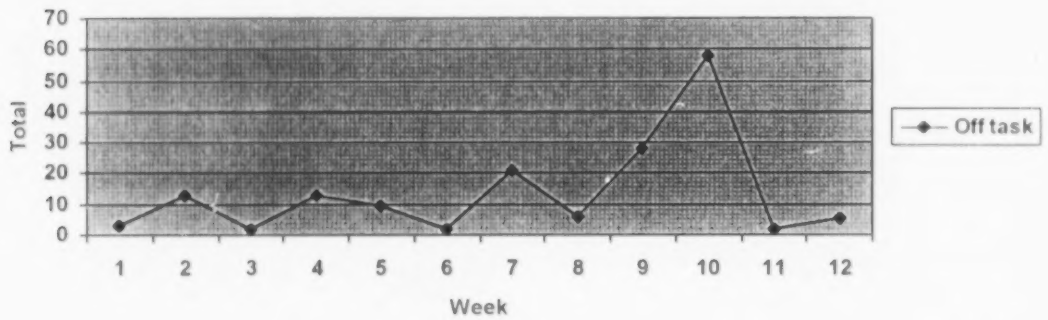

Figure 5. Number of off task instances over the 12 week intervention period

Students were observed being off-task as few as two times in the weeks three, six and eleven. As many as fifty-eight incidents were recorded in week. Off- task behavior recorded included talking, sleeping, and not participating in discussion or activity.

The researchers compared the number of students reporting a four or a five on the reflections after each activity to the number or students who completed homework assignments on time. This information was thought to be important in assessing the effects of student understanding on motivating students to complete work. The percentages of students with fours or fives on the reflections is charted with percentages of homework completed on time by week in Figure 6.

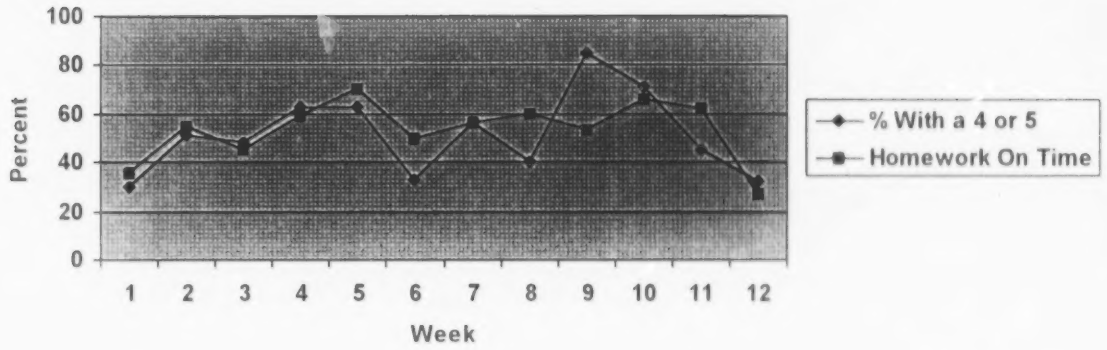

Figure 6. Relationship between students' reflections and on time homework completion

The information displayed in Figure 6 shows a relationship between the presented percentages. Slight variances are noted in weeks 6, 8 and 11. A significant variance is observed in week 9.

Conclusions and Recommendations

Based on the presentation and analysis of the data on homework completion prior to and during the intervention, the students showed no marked improvement on homework completion overall. As a serious drop in homework completion was noted the week before winter break, and the week prior to Thanksgiving break, it might be assumed that the students were influenced by outside factors not related to the intervention. The data show correlation between the percent completed and the percent completed on time, for the most part. A large gap between the total completed assignments and on time assignments was noted in week 6, which was a shortened week due to parent-teacher conferences. The information provided by these data would suggest that the students were not affected by any parental input that might have happened during the intervention. The data addressing student reflections seemed to show that student understanding of concepts learned did not increase due to the intervention. However, the researchers felt that this intervention strategy did create a more positive environment in the

classroom, and did promote more communication between teacher and students. Off-task behavior also seemed to be unaffected by the intervention. Again, the researchers felt that the strategy did increase communication, and did increase the chance for positive interactions between teacher and students. The data did not reflect this.

Reflecting on the data gathered during the interventions, the researchers attempted to find different methods of measuring student motivation. The researchers felt as though the intervention did not show an increase in motivation because an accurate measurement of motivation does not exist at this time. The attitudes of secondary students would be considered if a similar research project was to be implemented. These attitudes are difficult to change. The researchers also had a difficult time maintaining the amount of contact with parents that had been decided upon. Finding time and available resources, a quiet space, a phone line, a computer with Internet capabilities, was trying. To increase the chances for success, more time would be spent looking for viable and tested methods of assessing motivation.

The researchers felt as though the interventions implemented were worthwhile practices that should be continued. Teachers should communicate with parents in an attempt to help secondary students achieve. Teachers should communicate with students and ask them to reflect on their understanding. Grades should not be the only information teachers use to assess students' understanding of concepts. Motivation is a compelling subject, with an effect on student achievement. Educators must continue to work with students and parents in an effort to increase student motivation achievement.

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Appendix A
Parent Letter

Welcome to class! There is a lot to learn and the following information should be helpful for making this a successful semester for everyone.

Rules: No food or beverage is to be brought to class at any time! Geometry students are expected to have a book cover on their book at all times. Students need to be in their seat ready to begin class when the bell stops ringing.

Goals: To learn to solve problems using an equation solving approach. To prepare students to continue their studies in mathematics.

Materials: Students are required to bring a calculator (scientific if possible), notebook, textbook, paper and a pen or pencil to class every day. Geometry students are also required to have a compass and protractor.

Participation (5%): Students are expected to be in class the entire time, come to class prepared, and participate while they are there. Five points a day will be given for satisfying the preceding conditions.

Notebooks (10%): Everyone is expected to take notes each day during class and points will be given at the end of each unit for notebooks. Only partial credit can be given for loose or stapled pages!

Assignments (15%): Time will be given for students to work on most assignments. This is an excellent time to ask questions. You should expect an assignment every day. What students do not finish in class is to be completed BEFORE the next class period. Each lesson builds on the previous one and thus it is extremely important that you ask questions whenever possible and do not fall behind. The student will check assignments. Two points will be given for complete and on time work, one point for complete but late and no points for an incomplete assignment. Late work will be accepted until the day before the chapter test.

Quizzes (30%): Quizzes will be given periodically during the unit to check for understanding. Most of them will be announced but I may give a "pop" quiz from time to time. Failed quizzes can be re-taken for a maximum grade of a D-. This must be done before or after school within five school days of the original quiz.

Tests (40%): Tests will always be announced ahead of time and students will be given review problems to work for test preparation. Failed tests may be re-taken for a maximum possible grade of D-. This must be done before or after school within 5 school days of the original test.

Each quarter will count 45% of the total grade and the final exam is 10%.

I am looking forward to a very successful year for all of us. Please feel free to contact me with ANY questions you may have. I will usually be available before school (7:30 to 7:45) and after school (2:35 to 3:30). Messages can be left in the office 388-9880 and I will return your call as soon as possible. I am encouraging all students to come in for extra help whenever needed.

Please complete the following information for my records and sign stating that you have read my classroom policy.

Student Signature _____ Date _____ Period _____

Parent/Guardian Signature _____

Home Phone _____(mom or dad?)

Work Phone_____(mom or dad?)

e-mail Address _____

Please only provide a work number if you can take calls at work.

Appendix B
Phone Dialogue

Introduction (My name, course, period of day)
Positive comment about student
Number of missing assignments this chapter, this week
Homework grade
Total grade

How many days a week does your child study or work on math?
How many minutes each day?
Do you have an e-mail address? Here is mine.

Feel free to contact me any time and encourage your child to ask questions or come in for help whenever needed. I am available from 7:30 until 3:30 and period 5 and 7.

Any questions?

Thank you
Mrs. Buckley

Appendix C
E-Mail Dialogue

Introduction (My name, course, period of day)
Positive comment about student
Number of missing assignments this chapter, this week
Homework grade
Total grade

My e-mail address is
My phone number is
Please feel free to respond any time and continue to encourage your child to ask questions or come in for help whenever needed. I am available from 7:30 until 3:30, Monday through Friday.

Thank you,
Mrs. Buckley

Appendix D
Student Survey

Based on the lesson taught today please rate how comfortable you feel with the material

1 - No understanding

2 - Very little understanding

3 - Some understanding but need more help/study

4 - Ready to move on

5 - Able to teach it to someone else